NASA Procedural Requirements

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Responsible Office: Office of Safety and Mission Assurance

CHAPTER 1. Risk Management Overview

1.1 Risk Management Concept

1.1.1 Risk.

Risk is characterized by the combination of the probability that a program or project will experience an undesired event (some examples include a cost overrun, schedule slippage, safety mishap, health problem, malicious activities, environmental impact, failure to achieve a needed scientific or technological breakthrough or mission success criteria) and the consequences, impact, or severity of the undesired event, were it to occur.

1.1.2 Risk Management.

Risk Management (RM) is a process wherein the program/project team is responsible for identifying, analyzing, planning, tracking, controlling, and communicating effectively the risks (and the steps being taken to handle them) both within the team and with management and stakeholders. As depicted in Figure 1, RM is a continuous, iterative process to manage risk in order to achieve mission success. It should be a key element and an integral part of normal program/project management and engineering processes.
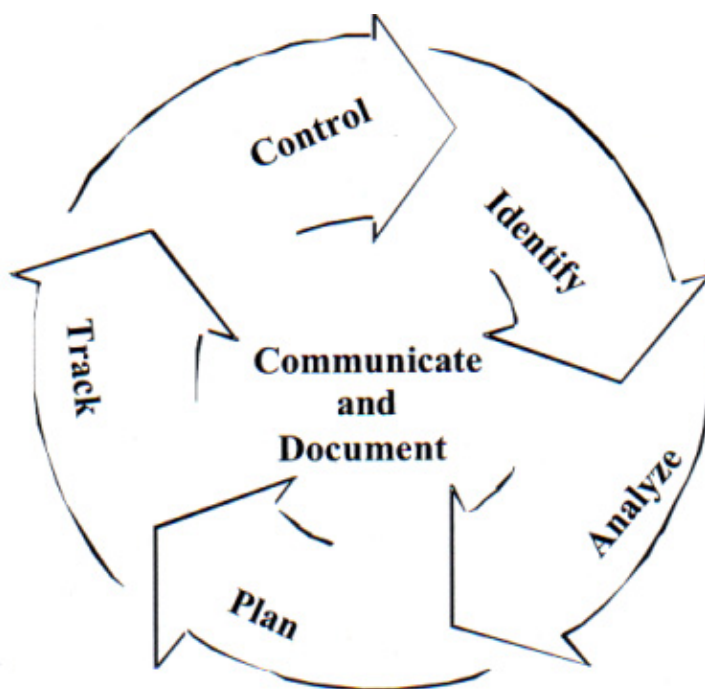
Figure 1. Continuous Risk Management (CRM)
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1.2 Risk Management Requirements

1.2.1 NPR 7120.5, "NASA Program and Project Management Processes and Requirements," provides the basic RM requirements that are applicable to all programs and projects under the scope of that NPR.

1.2.2 In addition to the RM requirements contained within NPR 7120.5, other RM and RM-related requirements are included within applicable regulations and other directives. Examples include NPR 5100.4, "NASA FAR Supplement," which includes requirements for RM within the context of acquisition planning, selecting sources, choosing contract type, structuring award fee incentives, administering contracts, and conducting contractor surveillance. NPR 2810.1, "Security of Information Technology," includes requirements for the identification and assessment of threats and vulnerabilities in order to pinpoint those areas that are most likely to be at risk should someone exploit a system or network vulnerability with the sole purpose of doing harm. NPR 8705.2, "Human Rating Requirements for Space Flight Systems," includes requirements related to risks associated with humans involved in or exposed to space flight activities. NPR 8715.3, "NASA Safety Manual," includes requirements related to safety risks. As appropriate, requirements from other sources such as these are referenced within this NPR.

1.2.3 Reserved.

1.3 Risk Management Responsibilities

1.3.1 The Program Manager (PM) is responsible for the following:

a. Applying a continuous risk management process within the program throughout its life cycle (Requirement 26006).

b. Documenting and approving that process within a Risk Management Plan (Requirement 30898).

c. Documenting and managing risks throughout the program's life cycle (Requirement 30899).

d. Approving the formal acceptance of all program risks (Requirement 30900).

e. Providing program risk status, especially concerning primary risks (see Appendix A, Glossary), to the Program Management Council (PMC) or Governing PMC as appropriate (Requirement 30901).

1.3.2 The Project Manager is responsible for the following:

a. Applying a continuous risk management process within the project throughout its life cycle (Requirement 26007).

b. Documenting and approving that process within a Risk Management Plan (Requirement 30902).

c. Documenting and managing risks throughout the project's life cycle (Requirement 30903).

d. Approving the formal acceptance/closure of all project risks (Requirement 30904).

e. Providing project risk status, especially concerning primary risks, to the Program Manager, Center Director, PMC, or Governing PMC as appropriate (Requirement 30905).

1.3.3 The PMC or Governing PMC is responsible for the following:

a. Evaluating the program/project's risk status and ensuring that the formal acceptance/closure of program/project risks is consistent with NASA's goals and requirements (Requirement 26008).

b. Concurrence on the acceptance of all primary risks (Requirement 30906).

1.3.4 The Safety and Mission Assurance (SMA) organizations at the NASA Centers are responsible for providing ongoing risk management consultation, facilitation, and training to program/project organizations (Requirement 26009).

1.3.5 The Systems Management Offices (SMO) at Centers and the Independent Program Assessment Office (IPAO) are responsible for assessing risk management as an element of their Independent Assessments (IA), Independent Annual Reviews (IAR), Non-Advocate Reviews (NAR), other independent reviews, or in their participation within regular program/project reviews (Requirement 26010). Appendix C provides a checklist for use in such assessments.

1.3.6 Headquarters Functional Offices (see Appendix A, Glossary) are responsible for the following:

a. Providing guidance concerning the identification, analysis, and mitigation of risks within their respective functional areas including support to their equivalents at the NASA Centers (Requirement 26011).

b. Supporting the PMC in the evaluation and assessment of programs/projects with respect to their risk management status within their respective functional areas (Requirement 30907).

1.3.7 Center Functional Offices are responsible for the following:

a. Providing support to programs/projects to assist in their identification, analysis, and mitigation of risks within their respective functional areas (Requirement 26012).

b. Supporting the Governing PMC in their evaluation and assessment of programs/projects with respect to their risk management status within their respective functional areas (Requirement 30908).

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